Appendix E: Proposed Action

Alternative 2 – Proposed Action

This alternative was developed to maximize attainment of the purpose and need while meeting agency and Forest Plan requirements. It emphasizes moving the project area toward Forest Plan desired conditions.

Appendix A includes tables of proposed vegetation management, fuels treatments, trail maintenance, and transportation actions for each stand in Alternative 2. The amount of a particular activity outlined in Appendix A (acres and miles), and the locations depicted on maps in Appendix I are approximate, based on inventory and survey estimates. The vegetation management table displays stand acres for each stand; these acres may be adjusted due to on-the-ground conditions at the time of implementation. Typically, the on-the-ground conditions will reduce the actual activity acres. In some cases, the implemented stand acres are less than the stand acres in order to protect water, fish, wildlife, plants, or because a particular portion of the stand does not lend itself to the proposed silvicultural treatment. The actual figures could change during preparation for a timber sale based on such things as avoidance of site-specific areas that are too small to show up at the scale of maps used for display, small inclusions of inoperable terrain, non-uniform stand structure, or slight refinements in the amount of road construction or reconstruction that may be needed.

Table E-1. Acres of various treatments for different tree species

Treatment	Aspen	Balsam Fir	White Pine	Hardwood / Hemlock	Jack Pine	Red Oak	Paper Birch	Red Pine	White Spruce	Total
Removal	45	166	16	5	0	0	0	0	0	232
Clearcut/Coppice	1,053	73	0	37	13	0	0	8	6	1,190
Improvement	0	0	0	263	0	0	0	0	0	263
Selection	0	0	0	5,130	0	39	0	0	0	5,249
Shelterwood	0	0	42	0	17	84	253	6	0	403
Thin	186	11	407	43	11	98	139	2,325	193	3,331
Restoration	25	0	0	0	4	4	0	147	0	181
Salvage/Sanitation	27	0	13	0	33	114	0	0	40	227
Pre-Commercial Thin	0	0	29	0	0	0	0	63	0	92
Experiments	0	0	0	526	0	0	0	0	0	526
Total	1,336	250	507	5,979	78	339	392	2,549	239	11,669

Variation of Forest Plan guideline for created openings greater than 40 acres

This alternative does not propose a site-specific, Forest Plan amendment. However, this does include a minor variation from a Forest Plan guideline (i.e. clearcutting over 40 acres). This variation would not change any Forest Plan standards and therefore no Forest Plan amendment would be required. Specifically, there are eight aspen or mixed aspen, paper birch, and balsam fir stands that would be combined to create harvest units greater than 40 acres in size, averaging roughly 43 acres (see table XX). These forest stands need treatment or harvest to meet the above discussed purpose and needs. To ensure the Forest Service minimizes forest fragmentation (maintain forest connectivity) and still resolves the issue of forest health in the Fourmile project area, it is necessary to create temporary openings that exceed 40 acres in

certain areas. The Forest is allowed to create temporary openings greater than 40 acres after project level analysis, 60 days of public notice, and review and approval by the Regional Forester.

Table E-2 below gives information about these 8 stands. These stands total 351 acres and average approximately 44 acres in size, with the largest stand measuring 124 acres. 124 acres are in Management Area 2A, 49 acres in 4A, and 178 acres in 4B.

Table E-2. Aspen units proposed to combine into clearcut harvests greater than 40 acres

Stand ID	Acres*	MA	BA**	DBH	Age
2189-14	49	4A	153	10	40
2211-5	124	2A	-	-	45
2219-13	102	4B	129	9	49
2218-20*	5	4B	133	10	52
2218-30*	27	4B	100	8	42
2218-31*	10	4B	127	10	57
2218-41*	26	4B	107	10	62
2218-35*	8	4B	160	10	42

* Stands smaller than 40 acres are included in this list because they border each other, creating an opening larger than 40 acres.

** BA = basal area

Deviating from the Forest Plan guidance of no clearcutting over 40 acres is being pursued to treat over mature aspen, increase forest health, and meet Forest Plan desired future conditions. This treatment would retain aspen populations at a level which is prescribed in the Forest Plan (i.e. lower amounts of older, dying aspen, and increase younger aspen that is beneficial for many wildlife species like ruffed grouse and golden-winged warbler). For the Fourmile project, clearcutting these areas would meet the need to promote healthy aspen stands and aid in moving the project area's age class distribution toward Forest Plan desired conditions.

The effects of this Forest Plan guideline deviation are described in the vegetation section, Section 3.4 of the EA, under the analysis of Alternative 2. Also, throughout Chapter 3 of the EA, effects to other resources like wildlife, soils, and recreation are outlined; more detail is contained in the resource reports in the project record.

If the Forest Service were not able to deviate from this guideline, these large clearcuts would be sub-divided by approximately 10-acre leave areas or aspen shelterwoods (underplanting white pine for regeneration). These leave areas would add up to approximately 60 acres.

Red Pine Plantations – Potential Alternative Treatment

Many red pine plantations within this project area were planted by the Civilian Conservation Corp (CCC). This effort was to help reforest the landscape after the great cut over in the late 1800s and early 1900s. Many of these plantations were not placed in areas typically known for red pine; however, since red pine was easy to plant, cheap, and readily available, this was the primary species planted. When red pine is planted on sites where it normally doesn't grow, it tends to grow poorly and be less resilient to insect and disease issues. Often, other species such as hardwoods are more suitable for those sites and are present in the understory as indicators that the site is not suitable for red pine in the long term. Due to this issue, some red pine plantations will need to receive their final harvest within the Fourmile project area.

The Forest Plan shows on page 2-4 that the minimum rotation age for red pine is 50. The Forest Service usually harvests red pine stands at the standard rotation age (100) or the extended rotation age (175); however, due to the planting of red pine on off-sites, and to avoid large pockets of tree mortality, there may be a need to regenerate these stands before the standard rotation age, but still greater than the minimum rotation age. The silviculturist will make the determination to thin or clearcut that stand based on site visits to the stands.

If the silviculturist feels that the best course of action is to regenerate the stand, they will recommend that change to the interdisciplinary team. If any team has a concern with changing the prescription to a final harvest in the stand proposed, actions will then revert back to a thinning. After being cleared by all specialists, the District Ranger will make the final decision whether to move forward with the final harvest or to revert back to the originally proposed thinning. This change in prescription may occur on as many as 1,327 acres of red pine stands within the project area. This number was determined based on the number of red pine stands, over the age of 80, within the Fourmile project area that Alternative 2 proposes receive a thinning treatment.

Table E-3. Range of Red Pine Age Class Distribution

Range of Potential Red Pine Age Class Distribution within the Fourmile Project Area				
Red Pine Age Class	**Desired Condition**	**Existing Condition**	**After Alternative 2 Implemented Condition**	**If all Red Pine stands over 80 (that were in the original proposed action) received a final harvest****
0-20	10-20%	1%	6%	40%
21-60	25-35%	32%	31%	31%
61-100	25-35%	52%	50%	16%
101+	20-30%	14%	13%	13%

** These numbers are based on what would occur if all red pine stands over age 80, in the proposed action, would receive a final harvest. This scenario is extremely unlikely.

2.2.1 Purpose and Need Connection to Proposed Action

The following actions were designed to move the project area toward desired conditions, while meeting Forest Plan goals, objectives, and standards and guidelines. The associated objectives are identified in the subsection headings in Table E-4. See Appendix A for a stands list and Appendix I for maps. Appendix G includes information about the various types of vegetation treatments.

The following table displays the proposed action items and what needs they achieve.

Table E-4. Proposed Action (Alternative 2) and What 'Need' They Achieve	
Need 1: Reduce stocking levels in overstocked forested stands	**Acres**
Hardwood Forests	6,004
Conifer Forests (thinned)	3,496
Paper Birch Forests (thinned)	139
Need 2: Maintain or move northern hardwoods toward an uneven-aged condition while maintaining or enhancing within stand species diversity	**Acres**
Selection/Improvement Harvest	5,433

Table E-4. Proposed Action (Alternative 2) and What 'Need' They Achieve	
Canopy Gaps Created	5,169
Need 3: Improve the age class distribution	**Acres**
Change Aspen Age Class	3,590
Change Oak Age Class	242
Change Birch Age Class	253
Change Conifer Age Class	645
Need 4: Improve tree species composition	**Percent**
Change in Aspen Forest	-4%
Change in Balsam Fir Forest	-1%
Change in Paper Birch Forest	-29%
Change in Jack Pine Forest	-1%
Change in Red/White Pine Forest	+4%
Change in Hardwood Forest	+4%
Change in Oak Forest	+5%
Change is Spruce Forest	-1%
Need 5: Initiate, maintain, or enhance forest research studies in the project area	**Count**
# of Studies Continuing	4 (~790 acres)
Need 6: Utilize Commercial Harvest as the Preferred Tool to Achieve Project Objectives	**MMBF**
Timber Volume Offered	45.8
Need 7: Build and maintain safe, efficient, and effective infrastructure that supports public and administrative uses of National Forest System lands	**Miles**
New Road Construction	1.2
Road Reconstruction	46.4
Road Decommission (currently closed)	146.9
Road Decommission (currently open)	0.3
Road Conversion to Trail	48.9
Close to Public, Remove from MVUM	1.0
Open to Public, Add to MVUM	0.9
Add Road to System, Not to MVUM (for Non-motorized or Administrative Use)	50.7
Need 8: Reduce hazardous fuels within communities at risk	**Acres**
Ladder Fuel Reduction	229
Prescribed Burning for Regeneration or Restoration Purposes	334
Need 9: Maintain the Scott Creek, Kimball Creek, and Nine-mile Hunter Hiking Trails and Associated Wildlife Openings	
Trails Maintained	36.1 miles
Existing Openings Maintained	134 acres

Road Decommissioning

For the proposed action the total miles of road to be decommissioned are 141.1 miles of unauthorized forest roads, 0.3 miles of National Forest System roads, and 5.8 miles of already

closed-to-the-public road. This means that they would be permanently removed from the transportation system, except to track the effectiveness of the decommissioning efforts, and allowed to return normal ecological functions. Out of this total, 146.9 miles of roads are currently closed, leaving 0.3 miles of open roads to be decommissioned. These roads have been found to have a low use value to manage the forest and others disrupt the ecological functions of the land. Based on funding and project activities these roads may be decommissioned over a long period of time and would be prioritized according to values from the Road Issue Matrix outlined in the Fourmile Travel Analysis report. Decommissioning efforts may include reestablishing drainage patterns, scarifying roadbeds, planting native vegetation, re-contouring the road bed back to pre-road conditions, or this action may include placing an earthen berm and allowed to revegetate naturally.

Road Closures

A total of 25.0 miles of National Forest System Roads are listed as currently closed (i.e. closed to public use) in the project area. There are opportunities to close an additional 0.7 miles of system roads. These are in addition to those that have been designated for decommissioning. These roads would be removed from the Motor Vehicle Use Map (MVUM), and the roads that will not be needed for future use would be physically closed. There are six roads that access private land and should not be open to public access; access should be allowed for Special Use Permit holders only. Roads currently closed, or listed for future closures, are those which are needed for intermittent access for management activities and would be part of the National Forest road system. This accomplishes the maintenance of safe, efficient, and effective infrastructure that supports public and administrative uses of National Forest System lands.

Road Reconstruction or Maintenance

The existing National Forest System (NFS) within the Chequamegon/Nicolet National Forest varies from two-lane blacktop surfaced roads to single lane woods roads, likewise, having differing vehicular use from passenger car to 4-wheel drive trucks. For this analysis, we are considering the single lane local roads. Many unauthorized roads were user-developed and will only accommodate light duty trucks or cars, making it necessary to improve or reconstruct them if they serve a Forest Service use. Reconstruction of these roads may include corner realignment, vertical realignment, and pit-run gravel placement to stabilize soils, and culvert or other drainage structures to protect hydrologic functions. There are also NFS roads that were built in the past that have not received any maintenance since the last timber sales and need heavy maintenance to bring them back to their original design criteria. Within the Fourmile area, 52.5 miles of unauthorized roads were determined to be “Likely Needed” under TMR subpart A (USDA FS 2015), and identified for addition to the current National Forest road system. Some of these roads need reconstruction, including roads that would be used for the proposed actions and not open to the public thereafter. Also, an additional 5.8 miles of NFS road are designated for reconstruction or maintenance, totaling 41.3 miles of road reconstruction proposed. This accomplishes Need 7.

Road Construction

A total of 1.2 miles of road construction have been identified within the Fourmile project area for long term resource management. Appropriate drainage structures would be incorporated to minimize soil movement and continue hydrological functions. Upon completion of management activities, all constructed roads would be closed to protect the investment of construction and to discourage any problematic public use pattern. This accomplishes Need 6, maintaining safe, efficient, and effective infrastructure that supports public and administrative uses of National Forest System lands.

Trail Conversion

A total of 43 miles of roads have been identified, within the Fourmile project area, for trail conversion. Included in this total are 41.9 miles of unauthorized roads and 1.1 miles of National Forest System Roads. These are roads that were found to be not needed for any other resources management activity. This action would remove the road from the road data base, INFRA. It would no longer be used to calculate road density figures, open or total road densities. This accomplishes Need 6.

Fuels Reduction

In the Fourmile project area, opportunities exist to remove understory vegetation in the wildland urban interface in conjunction with forest that have lots of woody debris (e.g. red pine plantation). Strategically located ladder fuel treatments within the Wildland-Urban Interfaces (WUIs) are proposed to meet two objectives: 1) create zones of defensible space for fire suppression; and 2) help prevent surface fires from transitioning to crown fires. Meeting these objectives contributes to the overall goal of reducing anticipated fire behavior and meeting Need 7 listed above.

Back in the early 1930s and 1940s, many red pine plantations across Wisconsin were created by the Civilian Conservation Corp (CCC). These plantations were necessary to allow stands to have forest regeneration after the region was completely cutover closer to the 1900s. These actions also included successful fire suppression, altering the landscape from its historical condition. Most of the area was historically accustomed to multiple stand replacing fires within a tree's lifetime. Without this common occurrence of fire, the soils, tree species composition, and understory vegetation have been drastically altered. Many stands now have thick layers of hazelnut in the understory instead of naturally regenerating tree species and blueberry. There is a need in Management Area 4B, which includes these fire suppressed areas, to reduce the planted trees and bring back multiple controlled burns to encourage the area to return to its historical vegetation and soil conditions.

Hunter Hiking Trails & Wildlife Openings

The Forest Plan specifies one of the themes for Management Area 2, which states non-motorized trail uses will be a primary recreation activity. To ensure this opportunity is available, the Scott Creek, Kimball Creek, and Nine-Mile HHT systems should be maintained in the Fourmile project area, including their associated wildlife openings. These trails and openings are primarily used by deer and grouse hunters in the fall, but also by hikers, bird watchers and other outdoor recreationalists during spring and summer. Currently, brush and early successional trees are starting to hinder these passages which restrict the recreational opportunities in this area. This project proposed to maintain (e.g. prune encroaching vegetation) 36.1 miles of hunter hiking trails and wildlife openings associated with the Scott Creek, Kimball Creek, and Nine-Mile trail systems.

Research Activities

Several long-term silviculture studies within the Argonne Experimental Forest are due for treatment: Farm Woodlot (established in 1949); Cutting Methods Study (established in 1951); and the Managed Silviculture Study (established in 2008). All of these studies contain second-growth northern hardwood forests. They are some of the few northern long-term silviculture experiments for northern hardwood forest type, which extends from Minnesota to Maine and southeastern Canada. Long-term experiments provide local data trends that short-term studies and computer models cannot provide. Re-treating these studies maintains study objectives, provides modern data to long-term records, and elevates their demonstration and education value.

The Farm Woodlot (40 acres in size) was originally used to demonstrate how local farmers with 40-acre woodlots could sustainably harvest (i.e. improvement cutting) a few acres per year. In 1963, the site's demonstration objective changed to single-tree selection (Arbogast, 1957), where partial harvests aimed for high quality sawtimber over decades. These partial harvests have occurred 6 times since 1949. The last harvest occurred in 1997 and another single-tree selection harvest is proposed. Re-treating the site with the same treatments maintains its value as one of the few demonstrations of single-tree selection treatments over 7 decades.

The Cutting Methods Study (120 acres in size) was established in 1951 to evaluate even and uneven-aged management in second-growth northern hardwoods (Erdmann and Oberg, 1973, Niese *et al.,* 1995, Strong *et al.,* 1995, Kern *et al.,* 2006). The study has an interpretive trail explaining forest ecology and management. Approximately 40 acres have been treated with uneven-aged methods 7 times and 80 acres were treated with even-aged methods once in the 1950s. To our knowledge, this is one of the longest-running replicated, second-growth northern hardwood silviculture studies. Re-treating the same treatments on this study would maintain its rare long-term dataset of contrasting approaches to northern hardwood management.

The Managed Silviculture Study (380 acres in size) was established in 2008 to begin long-term research that combines single-tree selection and wildlife habitat management (e.g. snag creation and varying canopy gap size). The study was designed in partnership with the Wisconsin Department of Natural Resources (DNR) and has additional replications on DNR lands. The stands were entered once using single-tree selection, canopy gap creation, and thinning in 2008. Proposed treatments would include 1 to 3-acre shelterwood removal (i.e. openings) for 120 acres and thinning for 240 acres. Re-treating the study would continue the goal to maintain the study for 100 years.

The Divide Canopy Gap Study (established in 1994) is north of the Argonne Experimental Forest, but part of the Chequamegon-Nicolet National Forest and administered by the Northern Research Station, i.e. Argonne Experimental Forest personnel. This study was established off the experimental forest because conditions were not available at the experimental forest; the study site is more diverse in tree species. The study aims to understand how the growth and diversity of tree regeneration and ground-layer vegetation respond to varying canopy gap sizes that could be used in uneven-aged management. The second-growth northern hardwood stand was entered once in 1994-95 and, through timber harvesting, canopy gaps were created from single-tree openings to 0.5 acre openings. The proposed treatment is to maintain the openings and thin between the gaps. Re-treating the study would maintain the long-term study objectives to grow the regenerating trees to the canopy (over the next 5 to 6 decades). This study is one of few in this forest type examining long-term tree and plant responses to harvest-created openings.